

MEEKS CABIN RESERVOIR



Introduction

Meeks Cabin Reservoir is a large reservoir built by the Bureau of Reclamation in the late 1970's to provide agricultural water to southwestern Wyoming. Only the extreme upstream end of the reservoir is in Utah, but because it is on the north slope of the Uinta Mountains and receives heavy recreational use by Utahns, it is included

in this report.

It was created by the construction of an earth-fill dam, impounding the Blacks Fork River. The shoreline is owned by the Bureau of Reclamation and the Ashley National Forest.

Characteristics and Morphometry

Lake elevation (meters / feet)	2,658 / 8,720
Surface area (hectares / acres)	193 / 477
Watershed area (hectares / acres)	32,842 / 81,152
Volume (m ³ / acre-feet)	
capacity	40,051,807 / 32,470
conservation pool	
Annual inflow (m ³ / acre-feet)	
Retention time (years)	
Drawdown (m ³ / acre-feet)	
Depth (meters / feet)	
maximum	
mean	20.7 / 68
Length (meters / feet)	4,020 / 13,190
Width (meters / feet)	805 / 2,641
Shoreline (meters / feet)	

Location

County	Summit (UT), Uinta (WY)
Longitude / Latitude	
USGS Map	USGS Map, UT/WY, 1967; Meeks Cabin Res, WY 1965
DeLorme's Utah Atlas and Gazetteer™	Page 55, A-4
(Not in atlas, but located where Blacks Fork crosses into Wyoming)	
Cataloging Unit	Black's Fork (14040107)

Recreation

Meeks Cabin Reservoir is in the Blacks Fork drainage, 21 miles east of U-150 on the North Slope Road (FS-058). The road bends north at Blacks Fork. Continue north rather than turning right to continue on the north slope road. The reservoir is about 3 miles north of the north slope road turnoff.

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It is also accessible from Robertson, Wyoming. From Robertson, go west for 4.5 miles to where the pavement ends. The road forks into three gravel roads. Take the left fork, which is likely the most heavily traveled. The reservoir is 13 miles south on this road.

The reservoir offers fishing, boating and solitude. The water is too cold for most swimmers. Fishing is popular, and there is an improved boat ramp.

Meeks Cabin Campground, administered by the Forest Service, is on the west side of the lake in Wyoming with 25 campsites, running water, and toilet facilities.



Watershed Description

Meeks Cabin Reservoir is at the northernmost reach of the glaciers that flowed down Blacks Fork. The valley is relatively shallow (500' deep), but quite wide (2 miles). The valley bottom is composed of terminal, medial and lateral moraines, resulting in uneven topography. The dam is built where the river cut a notch through the terminal moraine. The valley is forested, with numerous lakes and marshes impounded by moraines. Lyman Lake, also included in this report, is south of the Right Fork.

Midway from the dam to the headwaters, the streams cut across a series of hogback ridges exposed at the margins of the Precambrian rocks that compose the High Uintas. These narrow bands of other strata offer geologic and topographic diversity not found in the Tertiary sediments to the north or the Uintas themselves. This is the approximate delineation of the wilderness area, although in this watershed the boundary is several miles south of the hogbacks.

The southern half of the watershed is in the High Uintas. Four large valleys converge to form Blacks Fork—Little Left Fork, Left Fork, Middle Fork, and Right Fork. These occupy deep, wide glaciated valleys with many cirques cut into the interdigitating ridges. Most of the ridges exceed 12,000' elevation. Much of this area is part of the High Uintas Wilderness Area, protected from nonsustainable abuse by the Wilderness Act of 1964.

The watershed high point, Mount Lovenia, is 4,012 m (13,219 ft) above sea level, thereby developing a complex slope of 5.4% to the reservoir. The inflow and outflow is the Blacks Fork River. The average stream gradient above the reservoir 1.2% (61 feet per mile).

The soil in the watershed is derived from Tertiary sediments in the northern half and Precambrian rock in the Uintas, with small amounts of others at the interface between the two. Much of the area is covered with sediments processed by glaciers. See Appendix III for a complete soil description.

The vegetation community is comprised of alpine, pine, aspen, spruce-fir, oak, maple and marshland. The watershed receives 51 - 102 (20 - 40 inches) of precipitation annually with a frost-free season of 20 - 40 days.

Land use is 100% multiple use. The major use of the watershed is livestock grazing, recreation, and logging. Most of the watershed is in the Wasatch-Cache National Forest, but there is some private land in the northwest part of the watershed and in the area immediately east and

Limnological Data

Data averaged from STORET sites: 593977, 593978

Surface Data	1981	1989*	1991
Trophic Status	E	M	M
Chlorophyll TSI	-	40.70	44.90
Secchi Depth TSI	60	43.70	51.58
Phosphorous TSI	47.3	56.97	30.74
Average TSI	53.7	47.12	42.41
Chlorophyll <i>a</i> (ug/L)	-	2.8	4.3
Transparency (m)	1	3.1	1.8
Total Phosphorous (ug/L)	20	39	7
pH	7.5	7.1	7.7
Total Susp. Solids (mg/L)	<5	-	5.5
Total Volatile Solids (mg/L)	-	-	5
Total Residual Solids (mg/L)	-	-	2.0
Temperature (°C / °f)	14/57	11/52	13/56
Conductivity (umhos.cm)	45	69	61

Water Column Data

Ammonia (mg/L)	0.08	<0.01	0.03
Nitrate/Nitrite (mg/L)	0.10	-	0.17
Hardness (mg/L)	38	-	26.8
Alkalinity (mg/L)	34	-	37.5
Silica (mg/L)	-	-	3.1
Total Phosphorous (ug/L)	20	20	6

Miscellaneous Data

Limiting Nutrient	N	N	P
DO (Mg/l) at 75% depth	7.4	-	5.2
Stratification (m)	2-3	-	20-21
Depth at Deepest Site (m)	26	-	31

* Data from period 1 only.

west of the reservoir.

Limnological Assessment

The water quality of Meeks Cabin Reservoir is very good. It is considered to be very soft with a hardness concentration value of approximately 32 mg/L (CaCO₃). Although there are no overall water column concentrations that exceed State water quality standards there are reported violations of dissolved oxygen criteria in the deeper regions of the reservoir which aren't technically included in the standards. As noted in the September 3, 1991 profile there is a general decline in the concentration of dissolved oxygen below the thermocline near the 20 meter depth. It does not appear that this is detrimental to the system but it does indicate an area of concern that needs to be monitored. Data suggest that the reservoir is reservoir has been phosphorus limited but that a shift may be occurring to a nitrogen limited system. TSI values indicate that the reservoir is becoming less productive than in years past and is currently a mesotrophic system.

According to DWR reports the reservoir supports populations of brook trout (*Salvelinus fontinalis*), rainbow trout (*Oncorhynchus mykiss*), and cutthroat trout (*Oncorhynchus clarki*). All of these species are known to reproduce naturally within the reservoir and its tributary streams. Rainbow and brook trout are also stocked.

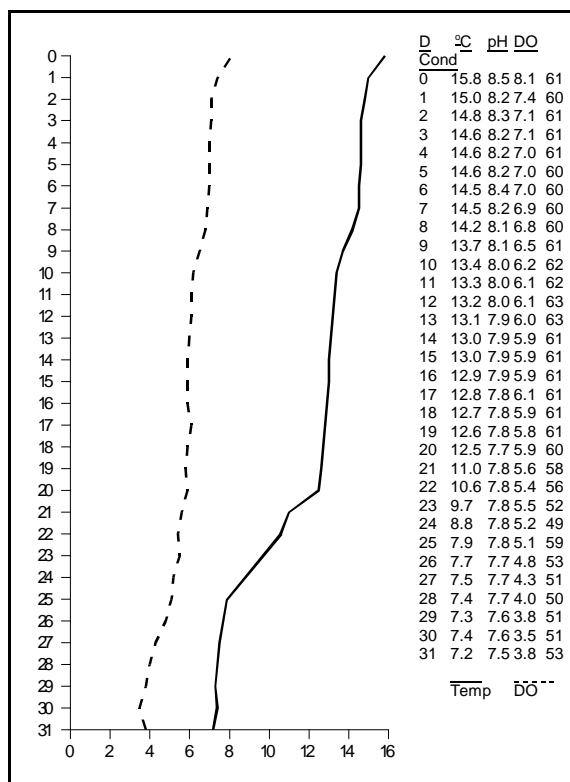
Phytoplankton in the euphotic zone include the following taxa (in order of dominance)

Species	Cell Volume (mm ³ /liter)	% Density By Volume
Centric diatoms	0.386	95.08
Pennate diatoms	0.020	4.92
Total	0.406	
Shannon-Weaver [H']	0.20	
Species Evenness	0.28	
Species Richness	0.05	

The phytoplankton community is dominated by diatoms which is indicative of good water quality and low productivity.

Pollution Assessment

Nonpoint pollution sources are: sedimentation and nutrient loading from grazing, and human wastes, litter and toxins from recreation. Cattle graze in the watershed and around the reservoir. Currently the Wasatch-Cache and Ashley National Forests are proposing to open the entire north slope of the Uintas to logging and oil drilling.



This could put this area at some risk, but most areas of the Uintas have long stream distances to mitigate impacts, and exploitation would be carefully mitigated to avoid adverse environmental affects, so impact should be minimal.

There are no point pollution sources in the watershed.

Information

Management Agencies

Wasatch-Cache National Forest	524-5030
Evanston Ranger District	307-789-3194
Mountainlands Association of Governments	377-2262
Division of Wildlife Resources	538-4700
Division of Water Quality	538-6146

Recreation

Mountainland Travel Region (Provo)	377-2262
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Reservoir Administrators

DOI

Beneficial Use Classification

Because the dam and outflow are in Wyoming, Utah does not classify the waters of Meeks Cabin Reservoir.